

**MIT**

# The Planning Method

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Urban Transportation Planning

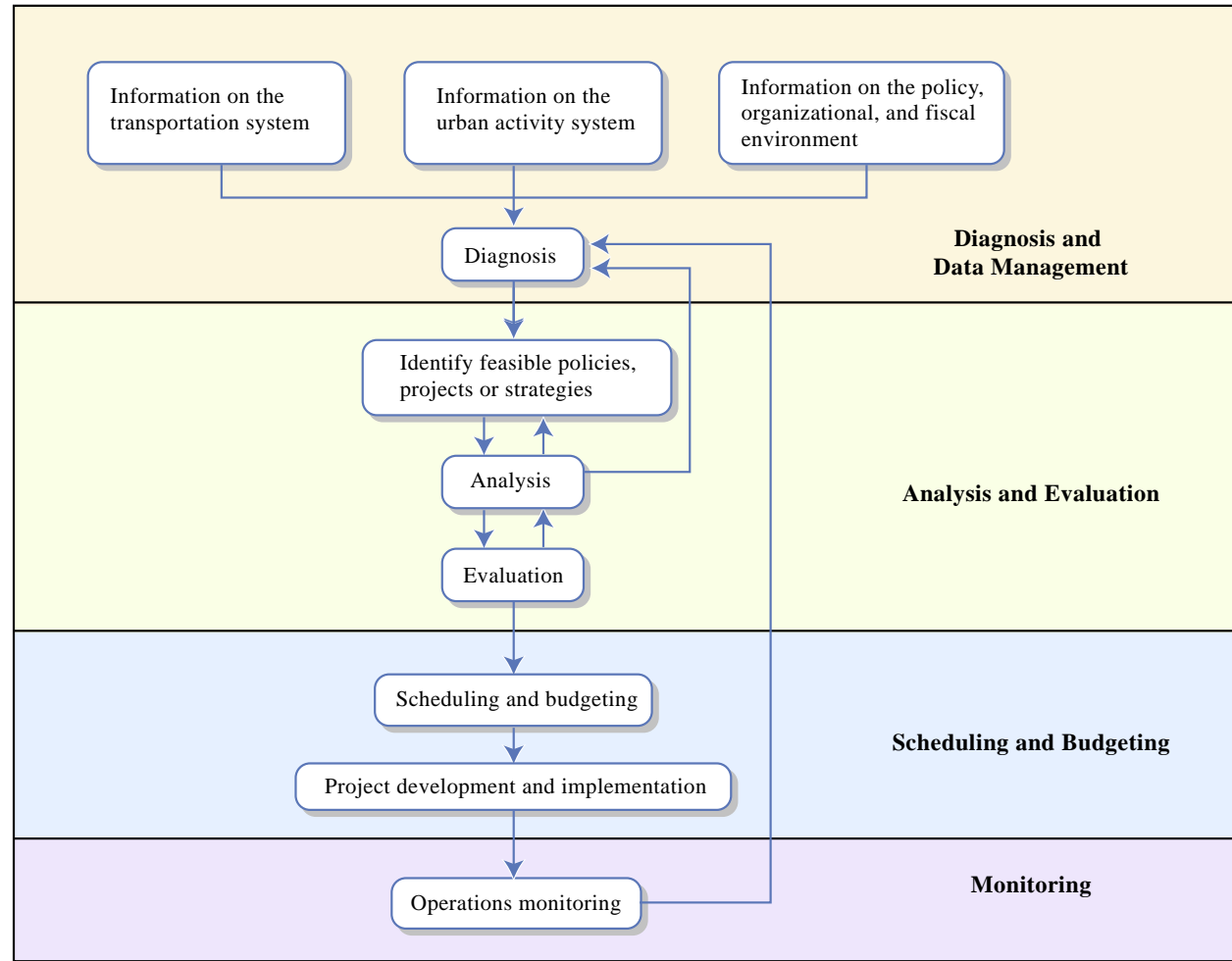
MIT Course 1.252j/11.540j

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# Transport Planning

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From textbook  
By Meyer and Miller

Figure by MIT OCW.

# The Planning Method:

## Why we need 12 Steps, not just 5?

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1. Scan the environment, review history, identify trends, project future conditions
2. Identify relevant actors, institutions, primary roles and interests
3. Define problem(s)
4. Develop solution(s)
5. Consider implementation
6. Predict outcomes, benefits, costs, impacts
7. Consider operation and maintenance of facilities, services
8. Evaluate alternatives
9. Choose course of action
10. Build constituency, consolidate allies, convert enemies
11. Implement
12. Operate and maintain

# MIT Alternative Interpretations: Planning as...

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1. ... predicting the future to accommodate demand
2. ... imagining a different future and developing an strategy to get there
3. ... as infrastructure planning
4. ... a system of public infrastructure and mixture of public and private vehicles
5. ... as service planning
6. ... as mobility planning
7. ... as accessibility planning

# MIT Alternative Interpretations: Planning as...

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8. ...as providing choices for individuals
9. ... as providing information for individuals to conform their plans to a master plan
10. ... as institutional planning
11. ... as financially constrained planning
12. ... as economic planning
13. ... as urban design
14. ... as environmental planning

# Alternative Interpretations: Planning as...

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15. ... advocacy planning
16. ... as implementation of legislation
17. ... as a bureaucratic process
18. ... as interactive process with “the community”  
(Who is included? Who is excluded?)
19. ... as institutional negotiation
20. ... as decision support (Who are the decision makers?)
21. ... as support for city planning

# Changing the Concept of Transportation Planning

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1. Bottleneck modification
2. Highway system function; benefit/cost
3. Transportation system function; benefit/cost
4. Inclusion of “external” impacts; full costs/benefits
5. Inclusion of “external impacts with mitigation
6. Land use impacts of transportation

# MIT Modes; Level of Service; Speed; Capacity

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(A) System Impact	Capacity; travel time
(B) Operator's point of view	Vehicle hours; cost/vehicle hour
(C) Customer's point of view	Mobility: travel time; comfort; waiting time; congestion Accessibility: options within given travel time
(D) Land developer's point of view	Accessibility Cost of land Parking



# Deficiencies of Models

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- A. Fudge Factor
  - Radial/circumferential
  - Schools
  - Crime
- B. Miss 4&5
- C. Will be inaccurate but seem real
- D. Possible but unusual
- E. Usually a mistake
- F. Usually a mistake
- G. Who evaluates?
- H. Who considers feedback?

# “Walk the Talk”

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- MIT Energy Forum, May 2006
- Susan Hockfield
- John Heywood

# Can We Be Realistic AND Positive?

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- Currently 750 million vehicles in world. By 2050, number is projected to be 2 billion. [Factor of 3]
- Is it feasible to reduce petroleum consumption per vehicle by a factor of 4? Could we really change?
- Maybe. If we can implement a 20% fuel consumption reduction in each of 6 different areas:  
$$0.8^6 = 0.26$$
- Will require changes in technology, vehicles, system operation, and behavior. Technology is key, but not enough.

# MIT Ways to Impact Energy Use: **Behavior**

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1. Encourage less aggressive driver behavior
2. Increase vehicle occupancy on substantial fraction of trips
3. Reduce mileage driven per person per year
4. Substitute bio-mass fuels for petroleum fuels
5. Manage existing transportation system more effectively (ITS)
6. Increase public transit utilization

# Ways to Impact Energy Use: Technology

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1. Shift the vehicle performance/fuel economy tradeoff towards lower fuel consumption
2. Improve vehicle maintenance, lubricants, tire pressure, reduce parasitic loads
3. Lighter weight, “less big” vehicles
4. Implement more efficient engine, drivetrain, and vehicle technologies
5. Develop and implement use of hydrogen as an energy carrier with fuel cell powered vehicles
6. Use electricity with advanced battery technologies to shift part of transportation energy demand away from petroleum